Commodore 64 Hamtext Operator's Manual

Serial Number _____

Kantronics

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INTRODUCTION

The growing popularity of personal computers has added a new dimension to amateur radio. Software, or the program that defines the job for the computer, has become an important tool in the hobby. Kantronics has created Hamtext to give you the ability to use a computer in the shack. Features of Hamtext include:

SEND/RECEIVE MORSE CODE 5-99 WPM
SEND/RECEIVE RADIOTELETYPE 60, 67, 75, 100 WPM
SEND/RECEIVE ASCII 110, 300 BAUD
OPTIONAL UNSHIFT ON SPACE
OPTIONAL DIDDLE
VIC SERIAL PRINTER COMPATIBILITY
KEYBOARD AUDIO FEEDBACK
OPTIONAL AUTOMATIC ID
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OPTIONAL AUTOMATIC CARRIAGE RETURN
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ADDRESSABLE FROM BASIC

Please take time to read the manual before you attempt operation of the program. You must understand the manual to use Hamtext to it's fullest potential. If you have trouble in operation check the trouble shooting section of this manual. You can also call Kantronics Customer Assistance during regular business hours: 8am to 12, 1pm to 5pm Central Time.

PRECAUTIONS

Hamtext by Kantronics is protected by copyright, and any attempt to copy the program or manual will automatically void the warranty. The manual is given the same serial number as the program board, and we cannot provide a duplicate. Therefore, special care should be taken to protect both the program board and the manual.

If the enclosed warranty card is returned to Kantronics you will receive all benefits stipulated in the warranty. Included in the warranty is a process for Kantronics to notify the user of any modifications to the program.

When handling the program board avoid touching the metal fingers of the board that insert into the computer. These fingers must be clean for proper operation. If the program board fingers are dirty, clean with a soft cloth and alcohol.

GROUNDING

The C - 64 and your transceiver were not designed to be connected together. The Kantronics Interface will do the job, but unless grounding precautions are taken, the results can be damaging to the computer, program board, or television.

Simply grounding each of the components may not insure against damage. ALL PARTS OF THE SYSTEM MUST BE CONNECTED TO A COMMON GROUND. Let's look at the connection between the C - 64 and the Interface as shown below.

At this connection, a potential voltage difference may arise for a number of reasons, and this voltage can be the cause for damage.

1. Your transceiver ground may not be at the same voltage potential as the TV ground.
2. Your TV may be an older type and present a negative or large voltage to the 64. This is OK if you are only using the 64, but may damage the Interface components.
3. Additional 64 peripherals may be grounded to a different "ground" also; these could present a different voltage potential to the Interface.

As you can see, there are many ways in which a voltage difference can exist between the 64 and the Interface. To insure that this potential voltage is eliminated, you must ground all system components to a common ground. One word of caution, if you have an old TV, make sure that the TV antenna leads are isolated from the 64 TV connection since they may have a voltage potential.

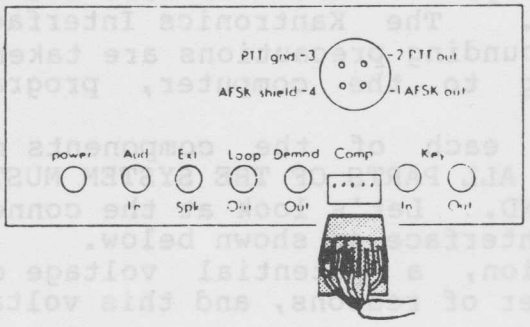
The 6526 chip can also be damaged by static electricity. Take care to avoid shocking the program board.

INSTALLATION

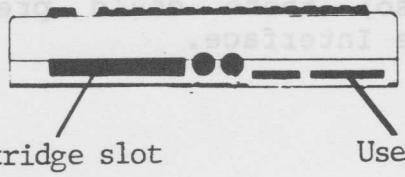
Installation of the Hamtext program is a simple three step process.

First, remove the cable that is included with the Hamtext package, and connect it to the computer and Kantronics Interface. Insert the cable into the Interface with the exposed wire side face up. See diagram.

The Interface Back Panel



Then connect the cable to the user port of the C - 64. See Diagram.



Second, with the C - 64 power OFF, insert the program board into the cartridge slot of the computer. Again, see the diagram. Place the board into the computer with the integrated circuits, or chips, on the top side of the board.

Third, follow the instructions in the Interface manual for connecting the Interface to the transceiver. The single cable to the user port is the only connection necessary to the computer.

Hamtext is a versatile program with several options. To become familiar with Hamtext, insert the program board into the C - 64 cartridge slot, and leave the userport cable disconnected. This allows you to practice in an "off the air" mode.

INITIAL OPERATION

WARNING: INITIALIZING THE HAMTEXT PROGRAM WILL ERASE ALL INFORMATION IN THE COMPUTER MEMORY. TO RETAIN THE COMPUTER MEMORY SAVE THE INFORMATION TO TAPE OR DISK.

Once the Hamtext board has been inserted into the computer you are ready to initialize the program.

IT IS IMPORTANT THAT YOU FOLLOW THESE INSTRUCIONS STEP BY STEP TO BETTER UNDERSTAND OPERATION OF THE PROGRAM.

First, turn on the power of the C - 64. Your screen should look like this:

```
*****COMMODORE 64 BASIC V2*****
64K RAM SYSTEM 30719 BYTES FREE

READY
```

Since the program is accessible from BASIC you will need to type in the following command to initialize the program.

```
SYS 32768
```

The screen should look like this:

```
*****COMMODORE 64 BASIC V2*****
64K RAM SYSTEM 30719 BYTES FREE

READY
SYS 32768
```

If you have mistyped, use the delete key to back up and retype the command. Once the screen is exactly as above, press the RETURN key. This will initialize the program.

Now the main menu will appear on the screen:

```
                    00:00:00
KANTRONICS    HAMTEXT
COPYRIGHT 1   FEB 1983

CHOOSE
     M(MORSE)
     R(RTTY)
     A(ASCII)
     P(PROGRAM OPTIONS)
     T(T/R OPTIONS)
```

The menu gives you five choices. Each of the first three choices will give you a Transmit/Receive mode, either Morse code, Radioteletype, or ASCII (American Standard Code for Information Interchange).

The fourth choice, PROGRAM OPTIONS, gives a menu of options that affect operation of the program. The fifth choice, TRANSMIT/RECEIVE OPTIONS, gives a menu of options that affect the transmission and reception of signals.

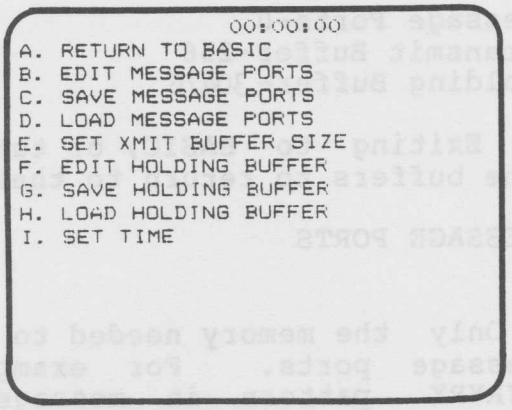
First, lets look at the fourth choice on the menu--PROGRAM OPTIONS. This selection brings up a menu of options that allows data storage and editing. Again, to better understand this program you should review the OPTIONS sections first, before attemping to use one of the Transmit/Receive modes. All options have a pre-set value or position. You should check each option to make sure it is in the proper position for your use.

TO RETURN TO THE MENU FROM ANY SPOT IN THE PROGRAM, DEPRESS THE RUN/STOP KEY.

PROGRAM OPTIONS

To select the PROGRAM OPTIONS mode depress the letter P on the computer keyboard.

Now the Program Options menu will appear on the screen.



Each of the lines on the screen represents an option you have for operation of the program. To select any option depress the letter to the left of that option. Before we define each of these options individually, we will explain the buffer system and simplified text editor.

BUFFER MANIPULATION

To better understand the features of Hamtext involving storage of messages, message ports, variable buffer sizes, and message editing, a short explanation of buffer manipulation is helpful.

Buffer Sizes-Hamtext uses very little of the C - 64 memory for operation, leaving most of the RAM (random access memory) free for storage and retreival of messages. The size of the memory in the computer limits the buffer sizes you can use.

Buffer Divisions-To utilize the available memory of the computer, we have divided the buffer into three areas. Each of the three areas listed uses a portion of the total memory available. The combination of all three will always equal the total memory available.

Because the program uses some BASIC memory locations the available memory is increased slightly.

Message ports	Holding buffer	Transmit buffer
0 bytes	30476 bytes	256 bytes

30732 total bytes available

Every time the program is initialized, the following buffer sizes are set:

Message Ports-0
Transmit Buffer-256
Holding Buffer-30476

Exiting to BASIC, or turning off the computer will cause the buffers to return to these settings.

MESSAGE PORTS

Only the memory needed to store information is used by the message ports. For example, if you place a 45 character RYRYRY pattern in message port number one, and a 55 character "brag" tape message in message port number two, you will be requiring 100 bytes to store these two message ports. (See Diagram)

Message ports	Holding buffer	Transmit buffer
100 bytes	30376 bytes	256 bytes

30732 total bytes available

Message port 1- RYRYRY 45 characters
Message port 2- "BRAG" 55 characters

Total Message Ports Characters 100

When initialized the program has 0 bytes reserved for the message ports.

TRANSMIT BUFFER

The transmit buffer capacity is set by using Option E of the Program Options. By setting the transmit buffer to a specific size, you define the total number of characters allowed in the buffer at one time. The amount of memory used by the transmission buffer is subtracted from the total available to the program. For example, you can set the transmit buffer to 400 characters, giving the following buffer divisions. (See Diagram)

Message ports	Holding buffer	Transmit buffer
100 bytes	25732 bytes	400 bytes

30732 total bytes available

The Transmit buffer is set for 256 characters when the program is initialized.

HOLDING BUFFER

The holding buffer is given all the remaining memory not used by the message ports or transmit buffer. As the size of the message ports or transmit buffer increases, the holding buffer will decrease. The holding buffer automatically stores information received and transmitted. As the buffer is filled to its capacity it will dump the oldest information to make room for new data. For example, if the holding buffer has a capacity of 30,000 characters, the most recent 30,000 characters received will be stored in the holding buffer. This information can be stored to tape or disk.
The holding buffer can also be used to create text files for transmission directly from the tape or disc.

SIMPLIFIED TEXT EDITOR (STE)

When entering, editing, or deleting information in either the message ports or holding buffer, you will be using the Simplified Text Editor. This is a set of control keys that allow you to manipulate information placed into the memory. All keys have a repeat feature. Any key will repeat as long as the key is depressed.

STE Control Commands-

CURSOR Keys-With Hamtext you can easily move the cursor up, down, and sideways. Each cursor key has a set of arrows that tell you the directions the key controls, up and down or sideways. To move the cursor down or to the left you must hold down the SHIFT key while pressing the appropriate CRSR key. It is important to keep in mind that you can move the cursor over the top of characters on the screen without affecting those characters.

You will also notice that when the cursor reaches the bottom or top of the page it will jump to the next page. This allows you to easily edit or review text already placed into the message port or receive buffer.

CLEAR/HOME key- If you press this key the cursor will return to the Home position, the top left-hand corner of the screen. If you hold down the SHIFT key and press the CLR/HOME key all text from the cursor to the end of the buffer will be cleared, or erased.

INSERT/DELETE key- You can insert and delete characters from the line you are typing by pressing this key. When you press the key by itself (delete), the character that was immediately to the left of the cursor disappears. If you're in the middle of a line, the character to the left is deleted and the characters to the right automatically move in to close up the space. Holding down SHIFT and pressing this key opens up a space in the line so you can insert a new character. Simply typing over characters will replace the typed-over letters with the new information.

Control commands cannot be inserted into text using the Insert key. Only text can be added using the Insert key.

RUN/STOP key- Pressing this key will return you to the options menu from the text editor mode. Pressing this key a second time will return to you the main menu.

LOWER CASE - The keyboard is normally in the upper case locked mode. To use lower case letters, hold down the SHIFT key and press the Commodore key. The same command will return the program to the upper case locked mode.

Use of lower case will only affect ASCII transmission, as CW and RTTY do not have lower case capabilities.

If the program needs an upper case command, such as in the menus, make sure you answer in upper case.

Now let's look at each of the options affecting use of the buffers.

PROGRAM OPTIONS (continued)

WARNING-ENTERING ANY OF THE MESSAGE PORTS OPTIONS, THE LOAD HOLDING BUFFER OPTION, OR SET TRANSMIT BUFFER SIZE OPTION, WILL ERASE THE INFORMATION IN THE HOLDING BUFFER. TAKE SPECIAL CARE TO NOT ENTER ANY OF THESE OPTIONS WITHOUT STORING THE HOLDING BUFFER TO TAPE OR DISK, IF YOU WANT TO RETAIN THE INFORMATION.

A. RETURN TO BASIC

To give the operator the greatest capability in using Hamtext, the program is addressable from BASIC. As we noted when initializing the program, you are required to give a command in BASIC to initialize the program. Option A allows you to return to the BASIC mode of the computer, while leaving the program board inserted in the computer.

To prevent accidental exit to BASIC, Option A is selected by holding down the CTRL key and pressing the letter A. The A is reversed on the screen to remind you to use the CTRL key. This allows you to use the computer for other functions quickly and easily, while leaving your Hamtext/Interface capabilities intact. To return to the program from BASIC you will need to give the SYS 32768 command again. Initializing the Hamtext program will erase all information in the computer memory. If you want to retain this information, store it to tape or disk.

This feature allows you to write additional programs that can be used in cooperation with Hamtext.

For example, if you wish to change the screen colors from the standard blue border and white screen, check page 60 of the C - 64 manual. While in BASIC you can designate any screen color you wish. Then simply give the SYS 32768 command to initialize Hamtext, and the program will come up in the new screen color.

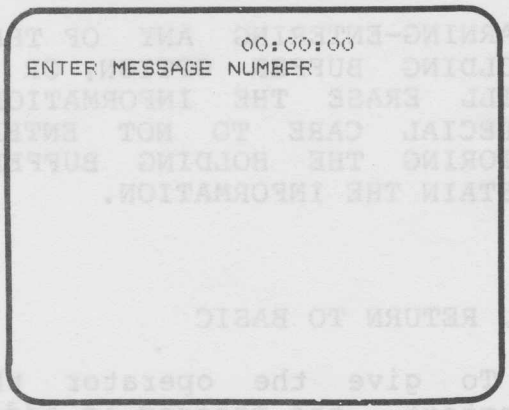
The possibliities are limited only by your ability to write BASIC, and your imagination.

B. EDIT MESSAGE PORTS

WARNING-DO NOT ENTER THE MESSAGE PORTS OPTIONS WITHOUT STORING THE HOLDING BUFFER, IF YOU WISH TO RETAIN THE INFORMATION. THE HOLDING BUFFER WILL BE ERASED AUTOMATICALLY WHEN YOU ENTER ANY OF THE MESSAGE PORTS OPTIONS.

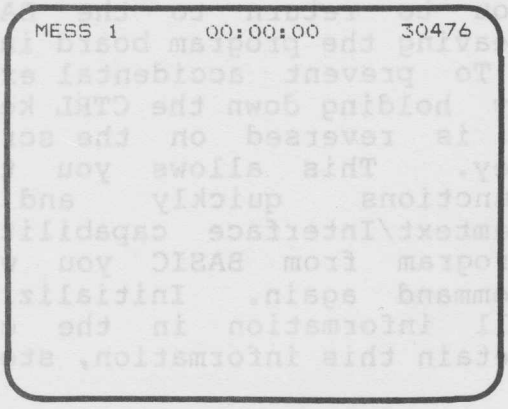
This option allows you to enter, edit, or delete information stored in a message port. Message ports are useful to retain information that is used often during transmission.

From the Program Options menu select Option B. Your screen should look like this.



The program is asking you to select a message port number. You should select a number from the keyboard, 0 through 9.

After selecting a number the screen should look like this.



The number in the top center of the screen is the number of characters available for use. You will notice that each character entered into the message port will decrease the available number.

Now use the Simplified Text Editor commands to enter information into the message port. As we noted, the message port will expand to hold the information placed into it.

Once you have completed the message port, press the RUN/STOP key to return to the options menu. The information is now stored in the message port.

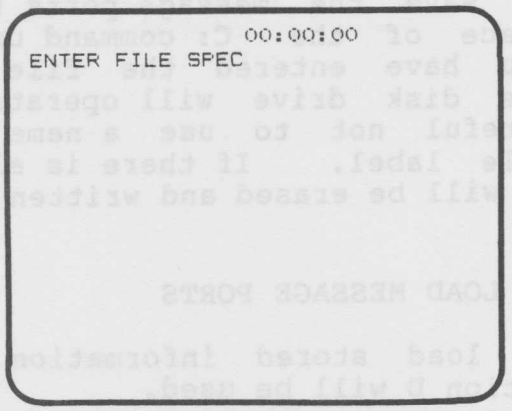
Transmission of a message port is covered in the CONTROL COMMANDS section of the manual.

C. SAVE MESSAGE PORTS

The information placed into the message ports can be saved to either tape or disk. This will store the information for later retrieval if the computer is turned off.

The message ports will be stored as a complete unit no matter how many ports are used. The time necessary to store the ports will vary depending on the amount of information in the message ports.

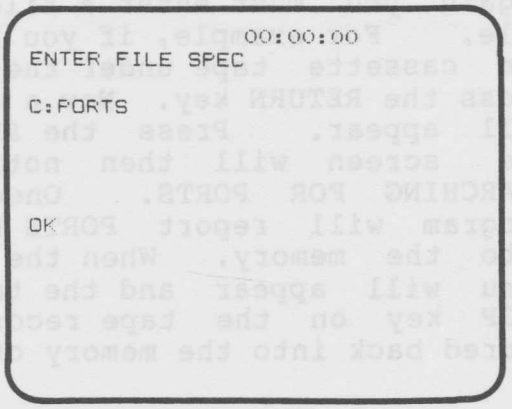
From the Options menu select Option C. The screen will look like this.



The program needs a FILE SPEC, or label for the file that is to be stored. You also need to tell the program if the file is to be stored to disk or tape.

To store the file to casette tape enter a C: command followed by the name of the file. For Example, if you wanted to store the message ports under the name PORTS, you would type C:PORTS and press the RETURN key. Now the command to PRESS RECORD & PLAY ON TAPE will appear on the screen. Depress the Record and Play buttons on the tape recorder.

Once you depress the record and play buttons on the tape recorder the screen should look like this.



The OK tells you that the message ports are being saved onto the tape. Once the process is complete the screen will return to the Options menu, and the tape recorder will stop. You need to depress the STOP button on the tape recorder, and rewind the tape to the point at which you began. Failure to turn OFF the recorder could damage the unit. Always press the STOP button when the process is complete. Make sure to note the location on the tape where you have saved this information to make retrieval easier.

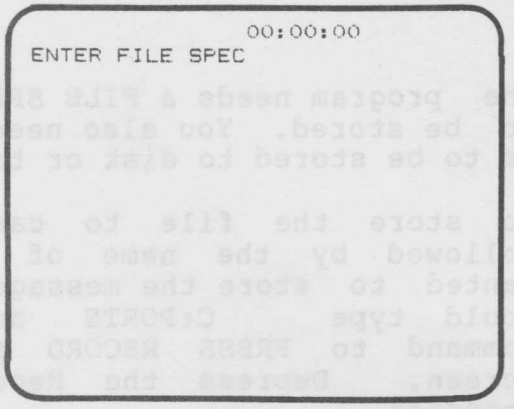
We have used the word PORTS as an example. You can label the stored information with any name you wish.

To save the message ports to a Disk use a D: command, in place of the C: command used for the cassette tape. Once you have entered the file spec and pressed the return key the disk drive will operate and store the information. Be careful not to use a name that has already been used as a file label. If there is already a file with the same name it will be erased and written over.

D. LOAD MESSAGE PORTS

To load stored information back into the message ports Option D will be used.

From the Option menu select D, and the following screen will appear.



Again you must enter a file spec, or label, for the stored file. For example, if you have stored the message ports to the cassette tape under the label PORTS, type C:PORTS, and press the RETURN key. Now a command to PRESS PLAY ON TAPE will appear. Press the PLAY button on the tape recorder. The screen will then notify you that the program is SEARCHING FOR PORTS. Once the PORTS file is found, the program will report PORTS FOUND and load the message ports into the memory. When the process is complete the Options menu will appear and the tape player will stop. Press the STOP key on the tape recorder. Now the message ports are stored back into the memory of the computer.

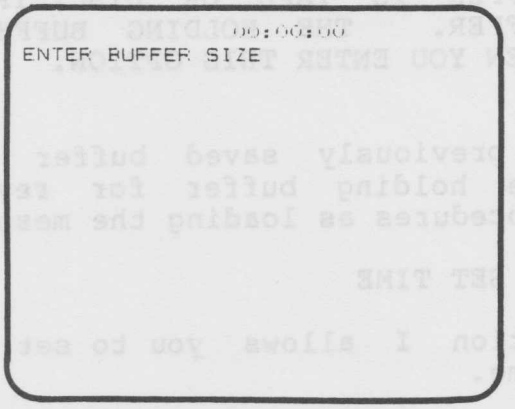
Again, use a D: for retrevial of information from a disk.

E. SET TRANSMIT BUFFER SIZE

WARNING-DO NOT ENTER THIS OPTION BEFORE STORING THE HOLDING BUFFER TO TAPE OR DISK, IF YOU WANT TO RETAIN THE HOLDING BUFFER. THE HOLDING BUFFER WILL BE ERASED AUTOMATICALLY WHEN YOU ENTER THIS OPTION.

Option E allows you to set the transmit buffer size. You are limited by the amount of memory in the computer. When initialized the transmit buffer setting is 256 characters.

Selecting Option E from the Transmit/Receive Options menu gives the following screen display:



Enter the size you want for the transmit buffer, and depress the RETURN key. The program will automatically return to the options menu. Make sure to press the RETURN key. The RUN/STOP key will return to the menu, but the transmit buffer size will not be changed.

You can set the transmit buffer at 0 to allow more space in the holding buffer, and use the immediate transmit buffer for sending. The immediate transmit buffer is covered in the Function Key Commands section of the manual.

F. EDIT HOLDING BUFFER

Selecting Option F gives you the ability to read and edit information stored in the holding buffer. The number at the top center of the screen is the number of characters available for use. You will notice that for each character entered the available number will decrease. All information received and transmitted is automatically entered into the holding buffer. You can also use this option to create a text file that can be saved to tape or disk for later transmission. Use the simplified text editor when using Option F.

G. SAVE HOLDING BUFFER

To save the information in the holding buffer select Option G, and use the same procedures as saving the message ports. The holding buffer can also be dumped to the printer by using a P:. When dumping the holding buffer to the printer you will simply give a P: command, and press the RETURN key. There is no need for a file name when dumping to the printer.

H. LOAD HOLDING BUFFER

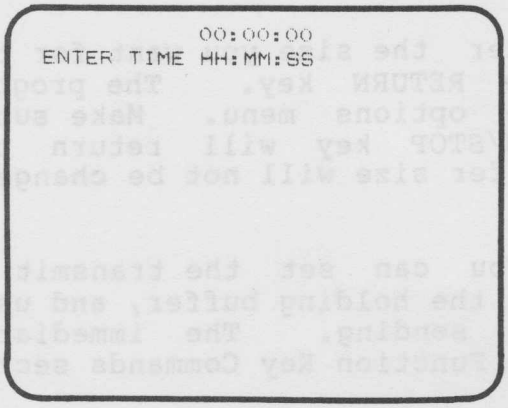
WARNING-DO NOT ENTER THIS OPTION WITHOUT STORING THE HOLDING BUFFER TO TAPE OR DISC, IF YOU WANT TO RETAIN THE HOLDING BUFFER. THE HOLDING BUFFER WILL BE ERASED AUTOMATICALLY WHEN YOU ENTER THIS OPTION.

A previously saved buffer or text file can be loaded into the holding buffer for review or editing. Use the same procedures as loading the message ports.

I. SET TIME

Option I allows you to set the 24 hour clock to the proper time.

When you select option I the screen will look like this:



Type in the proper digits to fill all six positions. You cannot exit this option without filling all six digits.

This completes the PROGRAM OPTIONS section. Return to the Main Menu by depressing the RUN/STOP key, and review the Transmit/Receive Options.

TRANSMIT/RECEIVE OPTIONS

Once you have returned to the Main Menu the following should appear on the screen:

```
                    00:00:00
KANTRONICS    HAMTEXT
COPYRIGHT 1   FEB 1983

CHOOSE
    M(MORSE)
    R(RTTY)
    A(ASCII)
    P(PROGRAM OPTIONS)
    T(T/R OPTIONS)
```

To enter the Transmit/Receive Options mode, depress the letter T. The screen should look like this:

```
                    00:00:00
  XMIT/RCV/ OPTIONS
A. USOS                 ON
B. DIDDLE               OFF
C. AUDIO FEEDBACK       OFF
D. AUTO ID              OFF
E. WRAPAROUND           ON
F. AUTO CR              ON
G. AUTO LF              ON
H. TU                   KANTRONICS
```

The following options directly affect operation of the Transmit/Receive modes. CAREFULLY READ THROUGH THESE INSTRUCTIONS BEFORE ATTEMPTING TO USE THE TRANSMIT/RECEIVE MODES.

Each option is set in an ON or OFF position. To change the option from ON to OFF, depress the letter to the left of that option. For example, to turn the Unshift On Space feature OFF, you will depress the letter A. Press A again to change the option back to it's original ON position.

A. UNSHIFT ON SPACE ON - With this option ON, the program will automatically return to the letters mode after each space received in RTTY. When receiving some transmissions with multiple numbers transmitted in groups, such as National Weather Service Teletype, you will want to switch the UNSHIFT ON SPACE feature OFF. If a received signal seems to print illegibly, you might attempt changing the UNSHIFT ON SPACE option to the OFF position. Normal operation would be to leave the unshift on space feature ON.

B. DIDDLE ON - This option gives the program the ability to send a null character when there is no character in the transmit buffer. This allows the receiving station to have a solid signal, for tuning purposes, during pauses in transmission. The DIDDLE feature only affects RTTY/ASCII transmissions. You should not use this feature during transmissions of ASCII data files, and the DIDDLE cannot be used with a transmission from the disk or cassette.

C. AUDIO FEEDBACK OFF - Option C allows you to hear an audio feedback of the computer keyboard if you are using a television as a monitor. With the option ON a "click" will be heard through the television speaker as each key is depressed.

D. AUTO ID OFF - With this option ON, the program will automatically transmit a CW-ID in the RTTY/ASCII transmit modes. Following every ten minutes of continuious transmission, message port number 0 (zero) will be transmitted in the CW-ID mode. If you wish to use this option, place your ID into message port 0 (zer0). How to place a message into the message port is covered in option B of the Program Options.

This option should not be used during transmission of data files, since the ID may cause spurious data at the receiving end.

E. WRAPAROUND ON - To keep the program from breaking words at the end of a screen dispay line, the signal display jumps to the next line if a space is encountered in the last five spaces of the screen display line. To get more characters per line turn the wraparound option OFF. Wraparound works on both the receive and transmit displays.

F. AUTO CARRIAGE RETURN ON - During tranmisiion of RTTY/ASCII this feature sends a carriage return automatically at the first space encountered after 65 characters, or after the 71st character if there is no space. This option should not be used during transmission of data files where spacing and carriage returns should be embedded. For example, RTTY pictures.

G. AUTO LINE FEED ON - Again, in RTTY/ASCII transmit a line feed will be sent automatically with each automatic carriage return. If the auto carriage return (Option G) is OFF the line feed will not be sent, as the line feed is programmed to occur with each carriage return.

To allow use of a printer in reception of Morse code, the program will also send a Carriage Return and Line Feed to the printer automatically during Morse reception. If your printer is double spacing, turn off the Auto Line Feed, Option G.

H. TU KANTRONICS - Hamtext is designed to be used with the Kantronics Interface. If you decide to use an alternate terminal unit, you will need to change Option H by pressing the letter H. This will change the screen to show OTHER in place of KANTRONICS. To connect your terminal unit check the ALTERNATE TU CONNECTION section of the manual.

Hamtext is warranted to work with the Kantronics Interface. We cannot guarantee operation of the program with any other terminal unit.

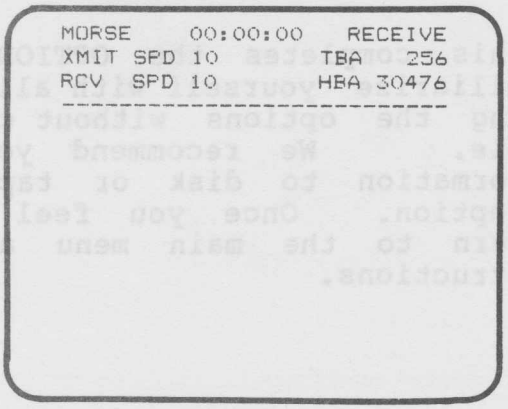
This completes the OPTIONS portion of the manual. To familiarize yourself with all the options available, attempt using the options without connecting the gameport computer cable. We recommend you attempt to save and load information to disk or tape before you try actual on-air reception. Once you feel comfortable with the options, return to the main menu and follow the Transmit/Receive Instructions.

TRANSMIT/RECEIVE OPERATION

RECEIVE MODE

To explain operation of the Receive modes we will step through operation of the Morse mode. All three of the modes, CW/RTTY,ASCII, are very similar, and operation is almost identical.

From the Main Menu select the Morse mode by pressing the letter M. You screen should look like this:



The lower portion of the screen is the receive area. Incoming Morse code signals are decoded and displayed on this portion of the screen. As the signal is received it will scroll upward and off the screen. Received signals are automatically stored in the holding buffer.

The top portion of the screen is the Status Banner. On the present screen you will see MORSE in the upper left hand corner. This reminds you that you are in the Morse Transmit/Receive mode. Directly below this you will see XMIT SPD 10 and RCV SPD 10. The Receive Speed (RCV SPD) indicator will automatically give you the speed of the incoming morse signal. The Transmit Speed (XMIT SPD) indicator allows you to set your transmit speed from 05 to 99 words per minute.

In the upper right hand corner is the receive display. Below are the letters and numbers; TBA 256 and HBA 3316. These two abbreviations are for Transmit Buffer Available, and Holding Buffer Available. As a signal is received or transmitted, it is stored into the holding buffer. The HBA number notifies you of the remaining space in the buffer. As you type into the Transmit Buffer, the TBA will decrease. During transmission the Transmission Buffer Available will increase, and the Holding Buffer Available will decrease.

Follow the tuning instructions in the Interface manual and tune to a Morse Code signal. Make sure you have connected the computer cable to the Interface and the gameport of the computer.

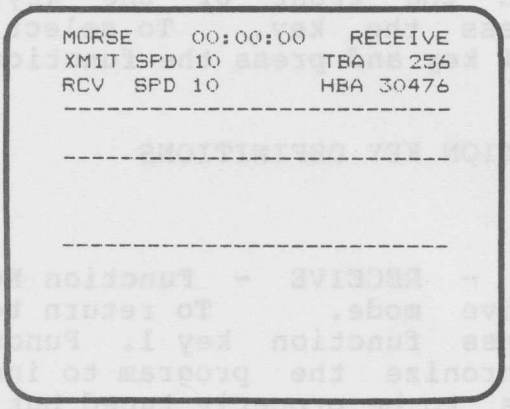
The only differences for receiving RTTY or ASCII instead of Morse Code, are in tuning the signal and selecting the speed. For RTTY or ASCII signals you must select the proper speed of the incoming signal, while the program automatically adjusts to incoming Morse signal speeds. Setting the Morse transmit speed near the speed of the incoming signals will help the program to sychronize with the receive signal.

To change the receive speed for RTTY or ASCII, press the number 3 function key. The function keys are explained in detail in the Function Key Definitions section of the manual. RTTY/ASCII signals should be received in the Lower Sideband mode.

TRANSMIT MODE

During the receive mode most of the screen is used for reception. The type ahead feature of the Hamtext program allows you to type information into the transmit buffer while receiving.

With the first character typed while receiving, the screen will divide into four sections:

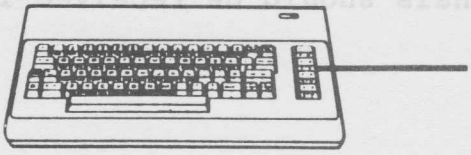


The status banner remains the same, while the receive portion of the screen is reduced. Two new areas appear on the screen, the transmit buffer and the transmission line. The transmit buffer shows information typed in, while the transmission line displays the actual signal being sent.

TRANSMIT/RECEIVE COMMANDS

While in the Transmit/Receive mode, Hamtext uses two types of keyboard commands to allow you to manipulate the program; Function Key commands and Control commands.

Function Key Commands- On the right hand side of the C - 64 keyboard there are four large keys. (See Diagram)



These are called function keys. Hamtext uses the function keys to give operating commands.

You will notice each key is marked with two numbers. For example, the top key is marked F 1 on the top of the key, F 2 on the front of the key. To select function 1, you depress the key. To select function 2, you hold down the SHIFT key and press the function key.

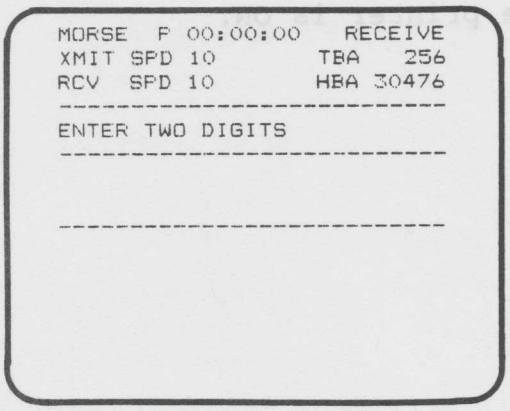
FUNCTION KEY DEFINITIONS

F 1 - RECEIVE - Function Key 1 places the program in the receive mode. To return to receive from transmit simply depress function key 1. Function key 1 can also be used to synchronize the program to incoming signals. If the signal seems to be properly tuned but not printing legibly, depress function key 1. This may help the program to properly decode the signal, especially when receiving Morse code. With each Function 1 command given a Carriage Return/Line Feed will be sent to the holding buffer and printer.

F 2 - TRANSMIT - This function transmits any text in the transmit buffer. You can type into the transmit buffer while receiving, then press function 2 to transmit the message. Information placed into the transmit buffer will not be sent until the F 2 command is given.

F 3 - CHANGE SPEED - In the Morse Transmit/Receive mode, function 3 will allow you to set your transmit speed from 5 to 99 words per minute. Function 3 will not work while in the Tramsmit mode.

While in the receive mode depress function 3. Your screen should look like this:



Enter two digits to set the transmit speed. Once the digits are entered the display will show the new transmit speed. In the RTTY/ASCII Transmit/Receive modes function 3 will cycle through the available speeds. RTTY 60, 67, 75, and 100 words per minute - ASCII 110 and 300 baud. With each speed change a Carriage Return/Line Feed is sent to the holding buffer.

F 4 - BREAK-IN - A short keyboard buffer is available for immediate transmissions or break-ins. Pressing function 4 will place the program into transmit, and allow you to type without affecting the transmit or receive buffers.

F 5 - INVERT - A practice sometimes encountered in using radio teletype is inversion of a signal, reversing the space and mark frequencies. Function 5 allows you to invert the incoming radio teletype or ASCII signals, to check for inversion. In the inverted mode the letter R in RTTY status banner will be reversed on the screen. In the ASCII mode the letter A will be reversed. Transmitted RTTY/ASCII signals will not be affected by Function 5.

F 6 - XMIT CLEAR - Function 6 clears, or erases, all information in the transmit buffer, returning the transmit buffer available (TBA) to its empty setting.

F 7 - PRINTER ON/OFF - Function 7 toggles the printer ON and OFF.

A letter P will appear in the status banner when the printer is ON.

All received and transmitted signals will be dumped to the printer. This information is also stored in the holding buffer, regardless of the printer setting. For printer connection instructions check the PRINTER ATTACHMENT section of the manual.

F 8 - HOLDING CLEAR - This function clears the holding buffer, erasing all information stored in the buffer. This will return the Holding Buffer Available (HBA) to its empty setting.

The Holding Buffer retains the most recent information transmitted or received.

CONTROL (CTRL) COMMANDS

In addition to the eight Function Key commands, Hamtext has seven Control (CTRL) commands. The CTRL commands are given by holding down the CTRL key and pressing the proper letter or number. Each of the control commands appears on the screen as a reverse letter or number. For example, placing message port number 1 into the transmit buffer will appear as a reversed number 1 on the screen.

CONTROL COMMAND DEFINITIONS

CTRL E - RETURN TO RECEIVE - When encountered in the transmit buffer this command returns the program to the receive mode. For an automatic return to receive at the end of transmission, place a CTRL E at the end of the message.

CTRL T - TIME TRANSMISSION - To place the clock time into the transmit buffer give a CTRL T command. When the command is encountered in the buffer, the hours and minutes displayed on the clock will be sent. The CTRL T command cannot be placed into a message port, it must be put directly into the transmission buffer.

CTRL I - CW-ID - A CW-ID is necessary for identification during transmission of RTTY or ASCII. To place your CW-ID into the transmit buffer, put a CTRL-I command before and after the ID. The ID will be sent at the Morse mode transmit speed. For ease of operation, place your ID into message port 0.

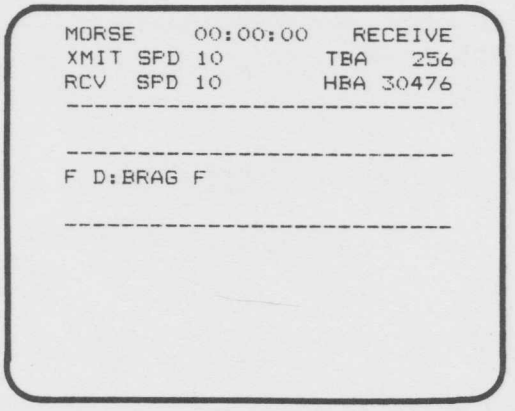
This will allow you to send the ID manually with a single command, or to use the AUTO ID option outlined in the Program Options. Make sure to place the CTRL I commands both before and after the ID when programming the message port.

CTRL (NUMBER 0-9) - MESSAGE PORTS XMIT - To transmit a message port, use a control command with the number of the message port. For example, if your ID is in message port 0, hold down the CTRL key and press the 0 key. This will place the port into the transmit buffer. The reversed number of the port will appear in the transmission portion of the screen, but the actual message port will appear on the transmission line as the message is sent.

CTRL F - TEXT TRANSMISSION - The CTRL F command is used when transmitting files from disk or tape. To enter a file into the transmit buffer give the CTRL F command, followed by the file spec. The CTRL F command should also be placed after the file label. For example, to send a file labeled BRAG from the disk, you would enter the following commands.

CTRL F D:BRAG CTRL F

The screen would look like this:



Once the transmit command is given, the program will search the disk for the file named BRAG. Once the file is found, it will be sent from the disk. Again, the file will appear on the transmission line, but not in the transmit buffer portion of the screen. To transmit files from the cassette tape, substitute C: followed by the file name. Invalid file labels will be ignored.

Control commands placed in a text file will be ignored except the last character in the file. For example, the last character can be used to return the program to receive by using a CTRL E command.

CTRL M - CARRAIGE RETURN - If you wish to send a manual carriage return, give the CTRL M command. The RETURN key will also send a carriage return.

CTRL J - LINE FEED - To send a line feed manually use a CTRL J command.

ALTERNATE TU CONNECTION

This software is written for use with the Kantronics Interface; therefore Kantronics does not warrant the use of Hamsoft with any other terminal unit. However, if you choose to use an alternate TU we suggest the following connections:

TERMINAL UNIT	FUNCTIONS
White-CW Key Out	Morse signals, active low
Red-RTTY Out	RTTY/ASCII signals, Mark high, Space low
Brown-Receive/Send	Normally high, active low for RTTY/ASCII transmitting
Green-Demod In	Normally high, active low when Morse signal present, active low when space frequency present.
Black-Ground	

CAUTION-Make sure the voltages on the lines of your transciver and TU are TTL level compatible, not RS232. Kantronics is NOT responsible for inter-connection of any hardware not of our manufacture.

TROUBLESHOOTING

To check for problems in operation of the Interface/Hamtext system it is necessary to isolate the problem. This is done by connecting all components in the order given below. You must follow these instructions exactly for the troubleshooting system to work.

1. Disconnect all cables and turn power off.

2. Insert the Hamtext program board into the C - 64 .

3. Turn the computer on. Type in the SYS 32768 command, and the Main menu should appear. Check the Morse, RTTY, ASCII receive and transmit displays. While in each mode, type random characters and transmit. You should hear the transmitted signal through the television speaker. If the signal is transmitted and the tones are heard, the Hamtext program is operating correctly.

4. Turn the power off again. Attach the Hamtext cable to the computer and the Interface. Also connect the cable from the external speaker of the receiver to the audio in of the Interface, and attach the external speaker to the Interface.

5. Power on the computer, Interface, and transceiver, in that order.

6. Tune in a RTTY or Morse signal and check for operation of the 10 segment bar graph on the front of the Interface.

7. Initialize the Hamtext program and step to the appropriate receive mode. Tune the signal until letters begin to appear on the screen. Display of characters at this point means that both the Hamtext program and Interface are operating properly.

8. By carefully tuning the signal you should be able to get legible display. Not all signals are acceptable, if the first does not print, try another. Following the tuning instructions included in the Interface manual.

9. Now tune to signals in other modes. Once you have properly received Morse and RTTY signals, add the cable for transmission. If problems arise as you attach additional cables, you have an improper cable connection. Check the Interface manual for correct cabling instruction.

Follow the troubleshooting steps exactly. By stepping through the troubleshooting guide you will be able to isolate the problem.

ERROR CODES

I/O ERROR # 5 - When loading or saving the message ports or holding buffer, it is possible to get an I/O error code. If an I/O ERROR # 5 appears on the screen it means that the disc drive or VIC serial printer is not attached correctly to the computer. Check the connecting cables to make sure that are complete.

SPECIAL CHARACTERS

To further aid Morse communication, the following abbreviations can be placed in the transmit buffer for transmission of special characters.

Symbol	Abbreviation	Meaning
$	$\overline{AR}$	End of Message
=	$\overline{BT}$	Break or Pause
%	$\overline{AS}$	Wait
&		Attention
#	$\overline{SK}$	End of Transmission
+	$\overline{KN}$	Invitation to transmit

WARRANTY

Kantronics warrants each new Hamtext to be free from material, workmanship, and program defects under normal use and service for a period of 90 days. Following this period, for nine months, Kantronics will replace or repair, at our option, your Hamtext at cost plus shipping and handling. This warrnaty is void if any attempt has been made to copy or alter the software.

ADDENDUM

The following features have been added to the Hamtext program.

SPECIAL CHARACTERS - In addition to the special characters given on page 29 of the Hamtext manual, you can send an AA signal by placing a * in the transmit buffer. AA is the abbreviation for "all after".

TIME TRANSMISSION - The CTRL T command CAN be placed into a message port for transmission of the clock time. The manual states this is not possible, but changes in the program have added this feature. The time displayed on the clock when the command is transmitted will be sent.

AUTO CARRIAGE RETURN/LINE FEED - Options F and G manipulate the automatic carriage return and line feed. The following settings are possible.

Option F ON - Option G ON - An automatic carraige return and line feed will be sent at the first space encountered after 65 characters, or after the 71st character if there is no space.

Option F OFF - Option G ON - An automatic line feed will be transmitted with each carriage return sent. All carriage returns must be sent manually with the CTRL M command, or RETURN key.

Option F ON - Option G OFF - An automatic carriage return will be sent at the first space encountered after 65 characters, or after 71 characters if there is no space. Any line feed must be sent manually with the CTRL J command.

Option F OFF - Option G OFF - No automatic carriage return/line feed is sent. All CR/LF commands must be in the text. This mode is best for transmission of text files, RTTY pictures, etc.; where spacing must be exact.

To allow use of a printer, the program will also send a CR/LF to the printer automatically during Morse reception.

TEXT TRANSMISSION - Use of the CTRL F command allows transmission of a text file from disk or tape. To store a BASIC program to tape so it can be called up with the CTRL F command, use the following program. While in the BASIC mode enter:

```
OPEN 1,1,1,"FILE NAME":CMD 1:LIST
```

Label the file with a name by placing the name where we have written FILE NAME. Then follow the instructions for loading the program to tape. When the loading process is complete give the following command:

CLOSE 1

To store the program to disk enter:

OPEN 8,8,8,"FILE NAME,S,W":CMD 8:LIST

Again, label the file with a name by placing the name where we have written FILE NAME, but you must also add the ,S,W following the file name.
Once the program is stored to the disk the cursor will return to the screen. When the cursor appears enter:

CLOSE 8

Now the file can be transmitted by following the CTRL F command instructions. See page 25 in the Hamtext manual.

CTRL F COMMAND - When entering the CTRL F command do not type a space between the command and the file name. The file name must immediately follow the CTRL F command. The CTRL F command must also immediately follow the file name. If spaces are entered between the command and file name, the file will not be transmitted.

FIGURES and LETTERS Commands

Hamtext now includes the ability to transmit Figures and Letters control characters. The following control (CTRL) commands should be added to the appropriate section of the operator's manual:

CTRL N - When encountered in the transmit buffer, the "FIGURES" character will be sent.

CTRL L - When encountered in the transmit buffer, the "LETTERS" character will be sent.

Note that these control functions are active in the RTTY mode only.